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Vol. III No. 8

BULLETIN

OF THE

Chicago Academy of Sciences

Annual Reports for the Year 1911

Winter and Spring Announcements

CHICAGO
Published by the Academy
February, 1912

PUBLICATIONS ISSUED BY THE CHICAGO ACADEMY OF SCIENCE

I. By the Academy:

Early Proceedings, Vol. I. Out of print. Pages 1–48.

Transactions, Vol. I. Out of print. Contains:

Art. I. Description of Fossils from the Paleozoic Rocks of the Western States, with Illustrations. By Professor J. H. McChesney.

Art. II. On the Climate of the Country Bordering Upon the Great North American Lakes. By Dr. I. A. Lapham.

Art. III. Remarks on the Geology of the Valley of the Mackenzie River, with figures and descriptions of Fossils from that region, in the Museum of the Smithsonian Institution, chiefly collected by the late Robert Kennicott, Esq. By F. B. Meek.

Art. IV. Descriptions of New Subcarboniferous and Coal Measure Fossils collected upon the Geological Survey of Iowa, together with a notice of new generic character observed in two species of Brachiopods. By Dr. C. A. White and D. D. St. John.

Art. V. Illustrations of North American Birds in the Museum of the Chicago Academy of Sciences. By Dr. William Stimpson.

Art. VI. Biography of Robert Kennicott. By a Committee of the Academy, appointed at the meeting of Nov. 13, 1866.

Art. VII. On the Antiquity of Man in North America. By J. W. Foster, LL.D.

Art. VIII. Descriptions of Certain Stone and Copper Implements Used by the Mound Builders. By J. W. Foster, LL.D.

Art. IX. List of Birds of Alaska, with Biographical Notes. By William H. Dall and H. M. Bannister.

Art. X. On additional to the Bird-Fauna of North America, Made by the Scientific Corps of the Russo-American Telegraph Expedition. By S. F. Baird.

Art. XI. A Preliminary List of the Rotifera of Iowa. By Samuel H. Scudder.

Transactions, Vol. II. Out of print. Contains:

Art. I. The North American Lakes Considered as Chronometers of Post-Glacial Time. By Edmund Andrews, A.M., M.D.

Bulletin, Volume I.

No. I. Glacial Marking of Unusual Forms in the Laurentian Hills. By Edmund Andrews, M.D., LL.D. Price, 25 cents.

No. II. Observations of Pluvialite Deposits in Peoria Lake, Illinois. By Rev. Joseph D. Wilson. Price, 25 cents.

No. III. List of Batrachia and Reptilia of Illinois. By N. S. Davis, Jr., and E. L. Rice. Price, 25 cents.

No. IV. Report of the Committee on the Microscopic Organisms in the Bowlder Clays of Chicago and Vicinity. By H. A. Johnson, M.D., and R. R. Thomas, F.R.M.S., Committee. Price, 25 cents.

No. V. The Northern Pitcher-Plant, or the Side-Saddle Flower. Sarracenia purpurea, L. By William K. Higley. Price, 25 cents.

No. VI. Bowlder Clays. On the Microscopic Structure of Certain Bowlder Clays and the Organisms Contained in Them. By Dr. George M. Dawson, B.S., F.G.S., etc. Price, 25 cents.

No. VII. Some Points on the Micro-Chemistry of Pus. By John H. Long, Sc.D. Price, 25 cents.

No. VIII. Chicago Artesian Wells. On Their Structure and Sources of Supply. By Leander Stone, A.M. Price, 25 cents.

No. IX. On Rhizocarps in the Erian (Devonian) Period in America. By Sir William Dawson, LL.D., F.R.S. Price, 25 cents.

No. X. A Paper on Dentine Primordiale. By William K. Higley. Price, 25 cents.

Bulletins, Volume II.

(Continued on third page of cover)

MATTHEW LAFLIN MEMORIAL BUILDING—THE CHICAGO ACADEMY OF SCIENCES

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THE CHICAGO ACADEMY OF SCIENCES

OFFICERS

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Professor C. B. Atwell.....First Vice-President
Dr. Henry C. Cowles.....Second Vice-President
Dr. Wallace W. Atwood.....Secretary
Mr. Henry S. Henschen.....Treasurer

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STAFF OF THE MUSEUM

Dr. Wallace W. Atwood.....Acting Director
Mr. Frank C. Baker.....General Curator
Mr. Frank M. Woodruff..Assistant Curator in Charge of Ornithology
Miss Mary A. Hardman.....Instructor and Librarian
Miss Mellie G. Bunnell.....Office Assistant
Herbert Lang.....Printer and Museum Aid
Harry Westelius.....Museum Aid
Charles Byron Day.....Museum Aid

HONORARY CURATORS

Dr. Thomas C. Chamberlin.....General Geology
Dr. Stuart Weller.....Paleontology
Dr. Oliver C. Farrington.....Mineralogy
Professor E. J. Hill.....Botany

TREASURER'S ANNUAL REPORT FOR 1911

Cash on hand January 1, 1911		$ 4,348.82
RECEIPTS		
Lincoln Park Commissioners	$5,416.52	
*Austin Property Rental Account	2,949.32	
Interest	3,156.74	
Membership dues	791.00	
Sale of old stereopticon	50.00	
Sale of collecting material	2.40	
		$12,365.98
		$16,714.80
DISBURSEMENTS		
Museum	$ 684.83	
Library	254.80	
Furniture and fixtures	156.96	
Salaries	7,527.36	
General expense	501.80	
Publications	105.75	
Photographic supplies	85.10	
Printing and stationery	434.25	
Educational expense	599.44	
Insurance	131.38	
Field expense	104.22	
Special publications	1,725.00	
Taxidermic supplies	47.47	
Child-Welfare Exhibit	535.41	
Membership extension	85.63	
		$12,979.40
Cash on hand December 31, 1911		3,735.40
		$16,714.80

Total receipts	$12,365.98	
Total disbursements	12,979.40	
Deficit	$ 613.42	
*Austin Rental Account net amount for December credited January 5, 1912	371.79	
Deficit for 1911	$ 241.63	

All bills for 1911 have been paid and are included in this statement.

Respectfully submitted,
H. S. HENSCHEN, *Treasurer*

REPORT OF THE LIBRARIAN

To the Members of the Academy:

In January, 1911, there were 5,373 bound volumes and 25,790 pamphlets in the Library. During the past year there have been added to the Library 107 books and 1,813 pamphlets; 726 pamphlets have been bound into 91 volumes. The Library now contains 5,570 books and 26,877 pamphlets.

The expenditures during the year for the Library have amounted to $254.80.

As is readily seen by a glance at the book cases, the Library shelves are over-crowded. All available space is now used. Even the tops of the stacks are filled, and much Library material has been wrapped up, labeled, and placed in the attic.

It is proposed during the coming year to bind many of our more valuable pamphlets, to catalog the Library by titles completely and accurately, to begin an analytical catalog of the most valuable works, to select those publications which are of little or no use to the Academy, and to store such material in the attic.

It is also hoped that the Children's Library, which has been planned, may materialize. For this new Library we have planned to fit up the present office with book cases, tables, chairs, magazine racks, and other furnishings, separating a small portion by means of a railing for the Secretary's and stenographer's desks. The room as planned will hold 1,400 volumes and accommodate 14 children at a time. This room can be opened for reading in the afternoons and Saturdays, and it has been suggested that the books might be loaned to the children of members of the Academy.

Respectfully submitted,

MARY ALMA HARDMAN, *Librarian*

REPORT OF THE CURATOR OF THE MUSEUM

Dr. W. W. Atwood, Acting Director, The Chicago Academy of Sciences:

DEAR SIR: I have the honor to present herewith my eighteenth report as Curator of the Museum, outlining the operations of the Museum for the year 1910.

During the past year attention has been directed mainly to the collections of birds and insects, these subjects being the most familiar

to the general public and, therefore, yielding the best educational results.

The work of the year may be considered under the heads of departments.

DEPARTMENT OF ORNITHOLOGY

Early in January, 1910, the cases on the west and a portion of the north side of the main floor were dismantled, the old furniture and partitions were removed, and replaced by solid partitions to provide

HAIRY WOODPECKER

A KINGFISHER AND TWO FLEDGELINGS

for the hanger now in general use in the Museum. These ten double cases have been installed as follows:

9 single cases: Birds that nest in Illinois.
1 single case: Birds of South America.
1 single case: Pheasants.
1 single case: Birds of the South.
2 single cases: Birds west of the Rocky Mountains.
1 single case: Birds of Europe.
1 single case: Birds of the Far East.
3 single cases: Water birds of Chicago parks.
1 single case: Structure of birds.
325 typical birds are exhibited in the geographic cases.

Work on the ecological exhibits illustrating the birds that nest in Illinois, together with their plumage changes relating to season, has

received special attention, and eighty groups, more or less complete, have been placed on exhibition. These are tabulated below, the figures following the name of the bird signifying the number of specimens in the groups, including adult and juvenile individuals.

NAME OF BIRD	SEASONAL PLUMAGE			
	Egg	Spring	Summer	Winter
Scarlet Tanager	..	..	..	4
Whip-poor-will	..	4	..	..
Wood Thrush	..	..	..	1
Rose-breasted Grosbeak	..	..	..	2
Cedar Waxwing	..	..	..	2
American Woodcock	..	5	..	..
Brown Thrasher	..	..	1	..
Loggerhead Shrike	..	..	2	2
Catbird	..	..	..	1
Cardinal	..	..	..	2
American Goldfinch	..	..	2	2
Redstart	..	..	2	2
Kingbird	..	..	4	4
Bronzed Grackle	..	..	1	2
Mourning Dove	..	..	..	4
Indigo Bird	..	..	..	1
Black-billed Cuckoo	..	..	1	..
Yellow-billed Cuckoo	..	..	4	1
Flicker	5	5	3	2
Hairy Woodpecker	..	..	..	..
Sapsucker	..	..	1	2
Bluebird	..	..	5	1
Downey Woodpecker	..	1	..	3
Red-headed Woodpecker	5	4	3	..
Baltimore Oriole	4	5	2	..
Hummingbird	..	..	..	2
Parula Warbler	..	..	..	1
Prothonotary Warbler	5	5	3	..
Swamp Sparrow	..	..	3	2
Bobolink	..	..	3	4
Meadowlark	4	6	4	1
Song Sparrow	3	5	2	1
Chickadee	..	5	..	5
Red-eyed Vireo	2	5	..	..
Towhee	..	..	4	3
Cowbird	..	..	1	2
Ovenbird	..	..	..	3
Phoebe	..	..	1	5
Red-winged Blackbird	..	..	1	4
Cliff Swallow	5	6	..	..
Barn Swallow	4	5	..	..
Kingfisher	5	5	..	3
Bank Swallow	5	6	..	..
Rough-winged Swallow	5	1	..	..
Total number of birds prepared				203

Of the above groups, special mention should be made of several which admirably illustrate the relation of the birds to their environment:

The Whip-poor-will: Adult and young in field with columbine.

The American Woodcock: Adult and young in field with red trillium.

The Meadowlark: Adult and young in field with spiderwort.

The Song Sparrow: Adult and young in field with wild rose.

The Cliff Swallow with nests on sandstone as at Starved Rock.

The Bank and Rough-winged Swallow on sand bank.

The Kingfisher on sand bank.

HOME OF THE KINGFISHER

The Barn Swallow's nest on rafters of old barn, with Cliff Swallow's nest under the eaves on the outside, showing the different shaped nest in this kind of a location.

These groups have been prepared by Mr. Frank M. Woodruff, whose artistic work in producing these results is worthy of high commendation.

The early completion of many of these ecological groups is not an easy matter because of the difficulty of securing some of the plumage changes of summer and winter. Birds in full spring and winter plumage are easily obtained, but molting individuals and those showing peculiar juvenile changes are difficult to secure and must be collected in the field. The birds, also, when in this plumage, are very

shy and secretive, and frequently several field trips are necessary to secure even a single individual. Many valuable specimens, however, have been added this year. A number of rare records have also been secured.

The collection of birds occurring in the Chicago parks has been completed by the addition of the herons, ducks, geese, gulls, and grebes, so that it is now easy for a visitor to identify any bird found in the vicinity of Chicago. Seven cases are now devoted to this exhibit.

Large captions have been prepared with white letters on black background, and placed over each case, thus enabling the visitor or student easily to find any desired case. Bromide enlargements of negatives taken from life have been exhibited embracing the following subjects:

Young Blue Jays on limb of tree.
Young American Bittern in nest.
Young Flickers on trunk of tree.
Adult Vesper Sparrow on nest.
Young Screech Owls on limb of tree.
Adult Bonapartes Gull on beach.

Large printed labels explaining the purpose of the bird exhibits, as well as such topics as migration and bird protection, have been placed about the Museum in conspicuous places.

DEPARTMENT OF ENTOMOLOGY

The old cases devoted to the exhibition of insects, the rail cases in the gallery, have long been inadequate for a successful preservation of this subject, and it is with great satisfaction that the Curator reports the change from this obsolete type to one of modern standard which not only protects the collection but renders its exhibition an easier matter both from an artistic and an educational standpoint. The cases adopted are of standard construction for material of this kind, $19 \times 28 \times 3\frac{1}{2}$ inches in size. Each insect tray is a unit, fitting into a standing A-shaped case set on the gallery rail. This new type of cases will exhibit about twice as many specimens as the old ones.

Twelve unit cases have been installed. Four cases are synoptic, explaining the structure, life-history, and other useful items concerning these insects, including mimicry and protective coloration. Eight cases contain all of the butterflies and a few of the moths found in the vicinity of Chicago. The life-histories of the majority of the species

are also shown, the caterpillars being mounted on their appropriate food plant. The cases are fully explained by means of printed labels.

It is planned to supplement these more academic cases with certain others illustrating the ecology of insects, one such, showing the common fall insects characteristic of the open field, being nearly ready for exhibition.

Work on the study collection of Lepidoptera presented by Mrs. Teresa Neubarth has progressed as far as case room is available: 31 standard drawers have been installed, containing 302 species and 1,241 specimens of butterflies (diurnal Lepidoptera). To these have been added and intercalated 513 specimens belonging to collections previously received. Each drawer of new material has been thoroughly disinfected before it has been placed in the cabinet. This work will be pushed during the coming year, and it is hoped that the greater part of the 10,000 specimens may be placed in proper cases.

DEPARTMENT OF PALEONTOLOGY

The collection of post-glacial fossils made by the Curator during 1909 and 1910 has been labeled and installed in a standard-unit storage case. This is one of the largest collections of this kind of material, completely illustrating the life of the ancient lakes which preceded Lake Michigan, including the mollusks, fishes, birds, and plants. The collection contains upward of 6,000 specimens.

PRINTING

Owing to pressure of other work, the printing of museum labels was discontinued for about six months. The addition to the staff of a museum aid who understands printing has made possible the production of a large amount of much-needed printing.

The work of this department is tabulated below:

PRINTED MATTER

	KINDS	IMPRESSIONS
Descriptive labels	123	369
Smaller labels	321	1,015
Special insect labels	20	3,000
Hand-printed labels for insects	489	489
Total	953	4,883

Seven labels too large for our press have been printed elsewhere. Five of these were for the bird collection and two for the exhibit illustrating the pearl-button industry.

ACCESSIONS AND CATALOGS

The work of this department is increasing with the growth of the Museum. We are still somewhat behind in catalog entries, but it is confidently hoped that during the early part of 1912 this condition may be materially changed for the better.

The work of this department is tabulated below:

Museum register entries	1,260
Museum card catalog entries	1,514
Original label filings	1,788
Total entries	4,562

TAXIDERMIC DEPARTMENT

The work of this department, under the able direction of Mr. Frank M. Woodruff, has been more than usually effective, the work consisting of the preparation of the ecological groups and the mounting of specimens for the ecological as well as for the Chicago collection of birds.

The year's work of this department may be summed up as follows:

Birds mounted	196
Bird skins made	88
Bird groups finished	80
Hollow stumps prepared	12
Branches provided with case hanger	200

FIELDWORK

Considerable fieldwork was done during the year. Mr. Woodruff, with several temporary assistants, made upward of fifteen trips after birds, and the Curator spent about two weeks securing botanical material for the ecological bird collection. About 45 species of trees were thus secured. Several rare plumages of summer and winter birds, besides a few nests of young birds, were secured. The localities visited included Starved Rock, Glencoe, Libertyville, Eggers, Highland Park, Ill.; and Kouts and Hammond, Ind. Much of the work was done in the immediate vicinity of Chicago.

CHILD-WELFARE EXHIBIT

Several exhibits were prepared for the Child-Welfare Congress held during the month of May. The exhibits prepared consisted of a case illustrating the fresh-water pearl-button industry, a model

THE OLD WAY

THE NEW WAY

MOUNTING EXHIBITS

showing the method of dredging for fresh-water mussels with the crowfoot dredge, six standard cases of insects illustrating such topics as How Insects Hide, Household Pests, How Insects Grow, Some Common Insects, and two cases of Chicago Butterflies; and a case of birds divided into two parts: one, some familiar birds arranged in families, and the other a few common summer birds, showing their nests, eggs, and young in their natural habitat as well as their plumage changes. For this purpose the Robin, Screech Owl, Baltimore Oriole, and Meadowlark were used.

The system of electric lighting used for these cases demonstrated forcibly the wisdom of using this kind of illumination for the majority of museum cases.

RESEARCH WORK

Owing to the large amount of museum work necessary for the rehabilitation of the Museum along the new educational lines, but little time has been available for research work. The following papers have been published, based on material belonging to the Museum:

"The Lymnaeidae of North and Middle America, Recent and Fossil." *Special Publication No. 3*, the Chicago Academy of Sciences, February, 1911.

"A Method of Exhibiting Large Descriptive Labels on the Outside of Museum Cases," *Proc. Amer. Asso. of Museums*, IV, 21–23 (1911).

"School Loan Collections as Prepared by the Chicago Academy of Sciences," *ibid.*, 36–40.

"Mollusks of Wellesley Island and Vicinity, St. Lawrence River," *The Nautilus*, XXV, No. 6, 66–67 (October, 1911).

"The Molluscan Fauna of Tomahawk Lake, Wisconsin, with Special Reference to Its Ecology," *Trans. Wis. Acad. Sci: Arts and Letters*, XVII, Pt. I, 200–46 (November, 1911).

RELATIONS TO OTHER MUSEUMS

During the year the Curator has been called upon to furnish information on various museum and research subjects. Many members of the Academy as well as other museums, universities, and individual scientists have sent material to be classified. Among the institutions may be mentioned the University of Illinois; Leland Stanford Junior University, California; State Normal School, Charleston, Ill.; United States Fish Commission; Carnegie Museum, Pittsburgh, Pa., and Washington University, St. Louis, Mo. Upward of 7,000 specimens have thus been classified.

ACCESSIONS TO THE MUSEUM

The accessions for 1911 include among their number one specially notable addition, that of the butterfly and moth collection made by the late Mr. Berthold Neubarth and presented to the Academy by Mrs. Teresa Neubarth. The collection contains over 10,000 specimens and embraces about two-thirds of the species and varieties of North American Lepidoptera. Many of the genera are represented by all of the American species. The majority of the species are represented by a large series of specimens from several localities. The localities in which the greater portion of the collections were made are Leadville, Manitou, Glenwood, Union, Denver, Colo.; Salt Lake and Ogden, Utah; Pasadena, Cal.; El Paso, Tex.; and Northern Illinois. The specimens are in an excellent state of preservation and are also well prepared.

Special mention should also be made of the valuable collection of minerals made by our deceased Trustee, Mr. Joseph Putnam, which has been presented to the Academy by Mrs. Putnam. This collection contains upward of 1,200 specimens, many of which are rare or especially valuable.

The collection of California mollusks and other marine forms (some 5,000 specimens), presented by Mrs. C. B. Sawyer, is also worthy of special recognition.

Mr. Charles F. Gunther has presented paintings of characteristic landscapes and two of hunting scenes which have helped to brighten the exhibition halls and relieve the severeness of the purely scientific exhibits.

Mr. L. G. Miller presented a relief bust of Lincoln which has been placed in the office.

The additions to the Museum are tabulated below:

Minerals	1,374
Fossils	46
Botanical specimens	27
Insects	12,024
Mollusca	6,224
Vertebrates	22
Birds	103
Invertebrates	96
Rocks	161
Industrial material	103
Pictures	6
Total	20,186

Valuable additions have been received from the following persons, to whom thanks are due:

Mr. E. E. Armstrong	Short-eared Owl, Crow.
Mrs. P. Bermke	Martin.
Mr. Willis K. Bliss	Fossil shark's teeth.
Mr. J. F. Boepple	New hooks for crowfoot dredge.
Mr. Chauncey Bothum	Six-lined Swift; Garter Snake; Box Tortoise; 2 Butterflies and Chrysalis.
Mr. E. C. Bratts	Scorpion.
Mr. T. D. A. Cockerell	Fossils.
The Corn Products Co.	Corn products.
Mr. F. C. Crouse	Scavenger Beetle.
Mr. Wm. Dickinson	Birds (4).
Mr. Theodore H. Esschen	Garnets.
Mr. Marshall D. Ewell	Spotted Sea Bat.
Mrs. M. Fletcher	2 Beetles.
Miss Marion Funsey	25 Pleistocene fossils.
Mr. Calvin Goodrich	45 Physas.
Mr. Charles F. Gunther	2 hunting pictures; 4 landscape pictures.
Mr. T. H. Hankinson	2 Physa gyrina.
Miss Mary A. Hardman	6 mantle rocks.
Mr. Frank Hay	Black-bellied Plover.
Mr. A. A. Hinkley	10 Physas.
International Harvester Co.	13 hemp and flax fibers; 49 hemp and flax pictures.
Kny-Scheerer Co.	Anosia plexippus.
Mrs. M. D. Lewis	Fossil; Selenite.
Mr. A. Lundquist	3 marble and onyx.
Mr. L. G. Miller	Bust of Lincoln.
Mrs. Teresa Neubarth	10,000 Lepidoptera; 2,000 Coleoptera and other insects; 1 Centipede.
Miss Martha O'Hara	7 fossils; 10 clay.
Mr. A. E. Ortmann	30 Lymnaea.
Dr. Herman S. Pepoon	100 mollusks.
Jack Pratt	Screech Owl.
Mr. Purcell	Dragon-fly.
Jos. R. Putnam Estate	1,200 minerals.
Dr. G. E. Roehrig	16 Crotatus adamanteus.
Miss Helen F. Russel	5,000 marine mollusks.
Mrs. C. B. Sawyer	167 minerals; 741 mollusks; 31 corals; 1 sponge; 2 Byozoa; 7 echinoderms; 17 seeds.
Mr. A. F. Scharf	19 marine shells.

Miss Shaw	1 Canary.
Mr. Frank Smith	100 mollusks.
Mrs. Herman Spaulding	1 Wasp; 3 Arachnids; 1 Horned-toad.
Standard Oil Co.	19 petroleum products.
Mr. Theodore J. Venn	6 fossils.
Harold Wanless	1 Sparrow Hawk.
Frank M. Woodruff	1 Kaolin; 3 Hymenoptera; 16 land and fresh-water shells; 5 Screech Owls.
Mr. James Zetek	75 land and fresh-water shells; 1 Pleurocera neglectum Anth.; 39 fresh-water mollusks; 2 Lampsilis ventricosa; 2 mollusks; 1 Chrysemys belli.

HOME OF THE BANK SWALLOWS

ACKNOWLEDGMENTS

The Curator is indebted to the following gentlemen who have materially assisted him in many ways:

Dr. H. S. Pepoon, Lake View High School, Chicago.
Mr. Bryant Walker, Detroit, Mich.

Dr. V. Sterki, New Philadelphia, Ohio.
Mr. L. S. Frierson, Frierson, La.
Dr. A. G. Ortman, Carnegie Museum, Philadelphia, Pa.
Dr. H. A. Pilsbry, Academy of Natural Sciences, Philadelphia, Pa.
Dr. C. A. Davis, U.S. Bureau of Mines, Washington, D.C.
Mr. A. S. Lewis, Superintendent, Lincoln Park, Chicago.
Mr. C. M. Tuttle, Artist, Chicago.

Respectfully submitted,
FRANK C. BAKER, *General Curator*

ANNUAL REPORT OF THE SECRETARY

At the close of the last year three considerations were prominently before the Society.

First: It was apparent from the remarks of the President and of several members of the Academy and from the reports of officers that the Academy was committed to an active and progressive educational policy. It was generally agreed that the Museum exhibits should be rearranged when necessary and all new exhibits prepared from the standpoint of their effectiveness in arousing and promoting interest in the natural sciences. The instructional work which had been in progress for the past two years had won many friends for the Academy, and was especially effective with the teachers and children of the public schools.

Second: It was apparent to the officers and members of the Academy that the Constitution and By-Laws of the Society needed thorough revision, so that the new work of the institution could be carried on more expeditiously and so that possible donors should have the greatest possible feeling of security for any funds which they might give or bequeath to the institution.

Third: As a quasi-public institution the Academy was coming to hold a more and more prominent place in the community and was accorded representation on many important educational boards and special commissions organized for the general cultural development in the city.

During the year which has just passed progress has been made along several lines.

First: The work which has been done in the Museum has been along the lines agreed upon for the general educational usefulness of that part of the institution.

Second: The instructional courses which have been offered have been attended by as many students as could well be accommodated. In some instances there have been demands far beyond what we could supply, and many of the children have registered on waiting-lists. During the year 553 delegates from 56 of the public and private schools of the city have received instruction at the Academy.

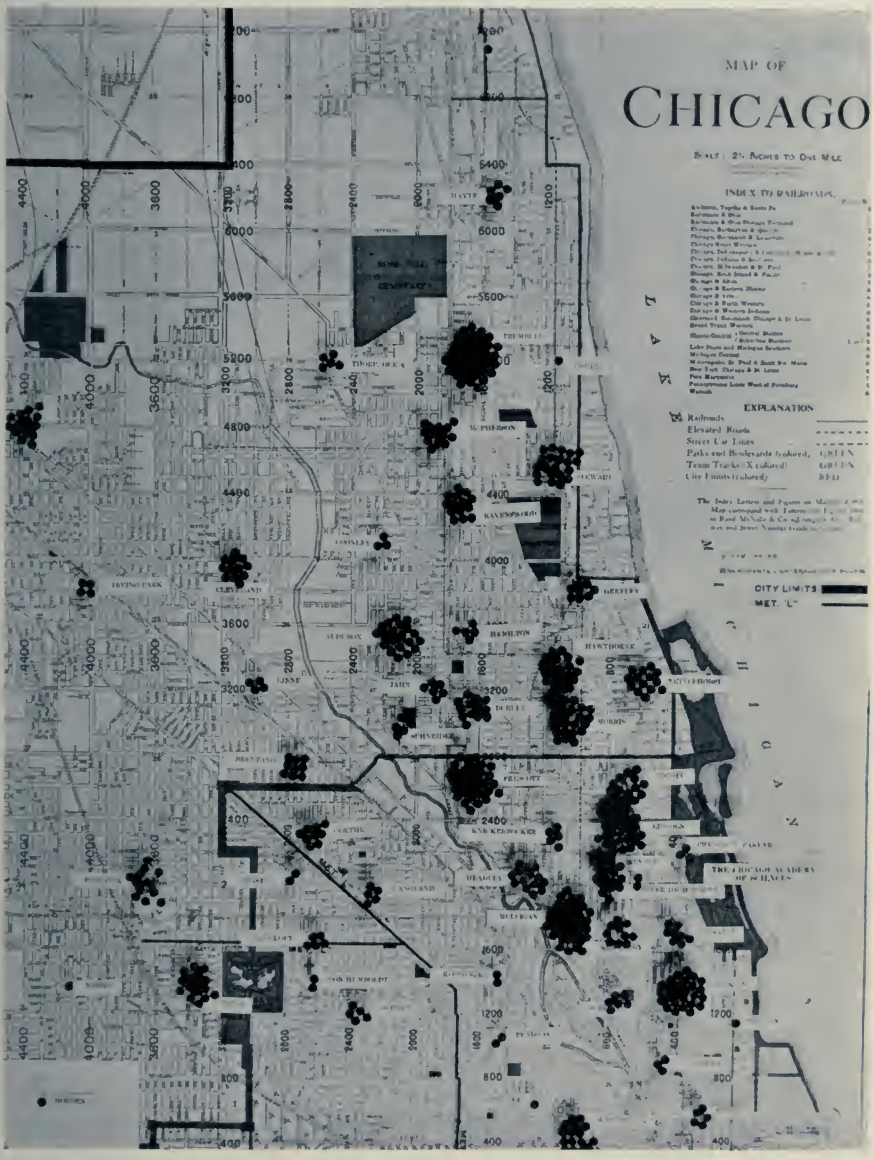
The geographic distribution of these delegates is shown on the map on the opposite page. Most of these delegates came from the north and northwest sides of the city, but several came from the south and west sides. The maximum distance traveled by any of these delegates from the schools to reach the Academy building was $6\frac{1}{2}$ miles. These delegates it will be remembered are little reporters. They came as representatives of their respective rooms. They are the most attentive and interested students an instructor could have. With note-books and pencils in hand and with frequent questions, they strive to get all they can to take back to their schools.

By this method the instructional work of the Academy reaches several thousand children each week while the courses are in progress. The number of children reached during the year is estimated at something more than 145,000.

TABLE A

SCHOOLS REPRESENTED BY DELEGATES IN YOUNG PEOPLE'S WORK

School	No. of Delegates
Adams	4
Alcott	15
Arnold	13
Audubon	20
Bancroft	5
Bismark	12
Brentano	9
Burley	13
Carpenter	1
Chase	3
Cleveland	12
Coonley	3
Field	1
Franklin	26
Goethe	9
Greeley	8
Hamilton	5
Hawthorne	20



Distribution of the 553 children delegates to the nature study classes of 1911, and the names of the schools from which they came.

School	No. of Delegates
Hayt	6
Headley	14
Holden	1
Irving Park	4
Jahn	6
Kinzie	5
Knickerbocker	5
Kościuszko	2
Langland	5
La Salle	9
Linné	4
Lincoln	25
Lowell	16
Mayfair	14
McPherson	14
Mulligan	33
Morris	22
Mozart	3
Nettlehorst	14
Newberry	11
North Division High	2
Nobel	1
Parker	3
Peabody	2
Prescott	30
Ravenswood	15
Schiller	6
St. Clemens	1
Schneider	6
Shelden	2
Schley	5
Stewart	21
Stickney	1
Thorp	5
Trumbull	38
Von Humboldt	2
Washington	17
Unclassified	3
Schools	56
Representatives	553

Third: The loan collections provided by the Academy have now been in use in the public schools for three years. During the year which has just passed the number and variety of loan collections has

been increased, and the demands for these collections have come more frequently and from a larger number of schools: 279 loans have been made to 44 separate schools or other educational institutions.

The geographic distribution of the schools that have used these collections is shown on the map on the opposite page. It is noticeable that many of the schools near the Academy do not make much use of these collections. Possibly the teachers in those schools bring their classes to the general Museum. It is also noticeable that the

LEAVING WITH LOAN COLLECTIONS FOR THE SCHOOLS

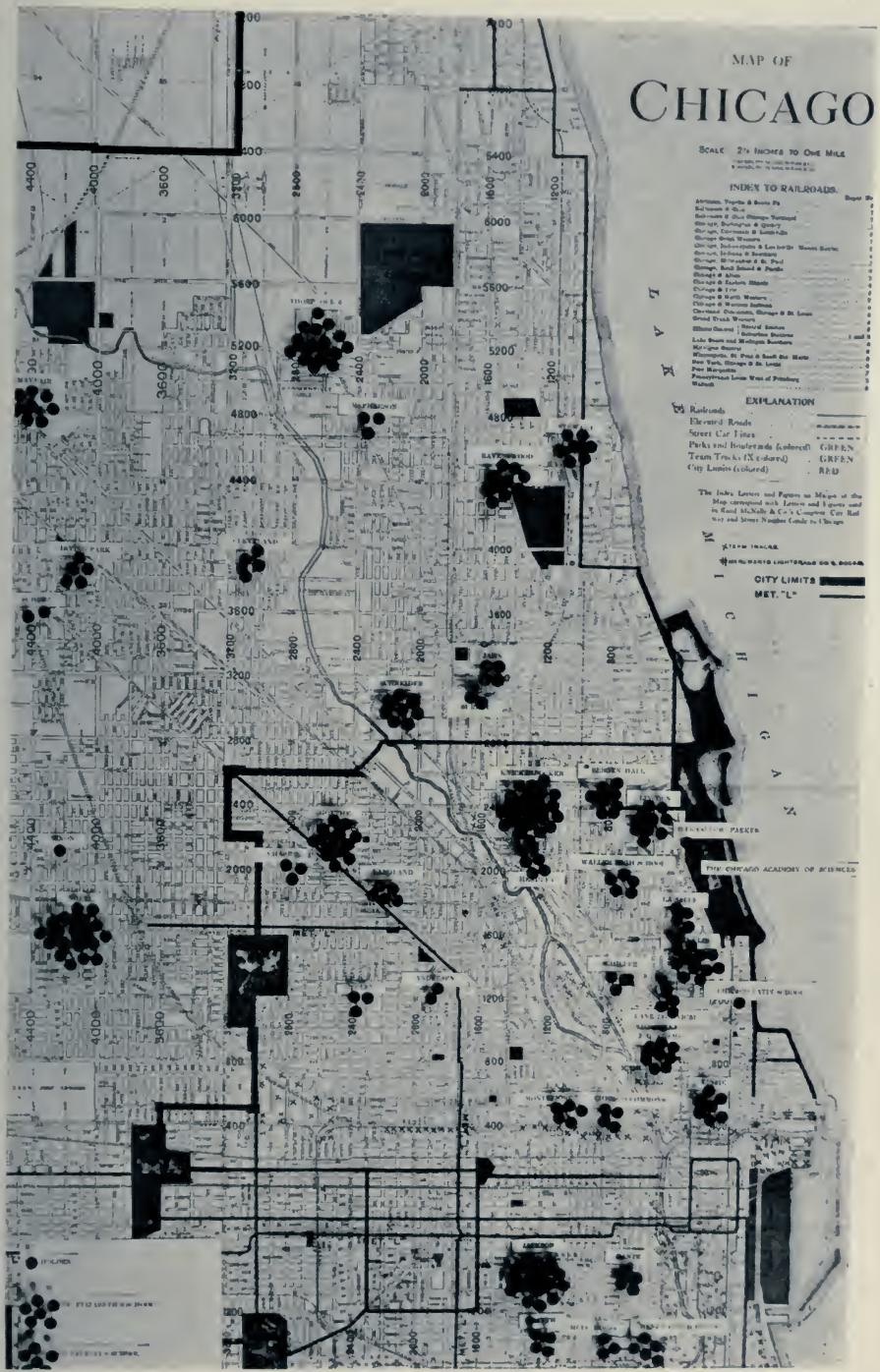
collections are taken long distances from the building and that where they are used they are used a great deal.

It is estimated that 20,000 children have benefited from these collections during the past year.

TABLE B

COLLECTIONS LOANED TO THE SCHOOLS

Schools	No. of Collections
J. Q. Adams	8
Andersen	2
Bergen Hall	8
Burley	2
Chase	3
Chicago Commons	4
Chicago Latin School	1
Cleveland	4
Colwell	4



Distribution of the 279 loan exhibits used in the schools during the year 1911, and the names of the schools at which the collections were used.

Schools	No. of Collections
Francis W. Parker	1
Franklin	11
Goethe	12
Headley	4
Henry Booth House	5
Holden	1
Hull House	3
Irving Park	5
Jahn	4
Knickerbocker	21
Kinzie	7
Lane Technical	4
Langland	5
La Salle	4
Lincoln	9
Lutheran Parochial	1
Mayfair	8
McPherson	3
Montefiore	5
Nixon	1
Nobel	19
Ravenswood	8
Schiller	3
Schneider	8
Schurz	2
St. Cecelia's School	6
St. Elizabeth's School	6
Stewart	7
Summer Vacation School	25
South Bend High School	2
Thorp, Ole A	15
Tuley	3
Unclassified	18
University of Chicago	1
University of Illinois	1
Waller	5
Total	279

Fourth: Nature-study courses of instruction, some of which were in the field, were offered free of charge to the teachers of the public schools and Teachers College Credit Courses have been offered. These courses have been well attended.

Fifteen separate courses of instruction have now been organized for the teachers and children.

ACADEMY NATURE-STUDY COURSES

Each course commonly consists of six lessons in the classroom, laboratory, or field.

Course I. Nature-Study, general.
Course II. Nature-Study, general.
Course III. Nature-Study, general.
Course IV. Trees—Dr. H. S. Pepoon.
Course V. Wild Flowers of Chicago Region—Dr. H. S. Pepoon.

LABORATORY WORK

Course VI. Physical Geography—Miss M. A. Hardman.
Course VII. Field Course for Teachers—Dr. H. S. Pepoon.
Course VIII. Leaves and Small Fruits—Dr. H. S. Pepoon.
Course IX. Elementary Natural History—Mr. Frank C. Baker.
Course X. A Study of Some Common Farm Products—Miss M. A. Hardman.
Course XI. How to Know the Common Minerals and Rocks—Miss M. A. Hardman.
Course XII. Nature-Study Course for Teachers—Dr. H. S. Pepoon.
Course XIII. Studies of Birds—Mr. Frank M. Woodruff.
Course XIV. A Laboratory Course for Teachers—Dr. H. S. Pepoon.
Course XV. A Laboratory Course for Eighth Grade—Dr. H. S. Pepoon.

During the past year the instruction has been as follows:

INSTRUCTIONAL COURSES AT THE ACADEMY DURING 1911

Course	Subject	Teacher	No. Enrolled	No. Lessons	Total No. Present at All Classes
V.....	Trees.....	Dr. H. S. Pepoon	69	6	269
VI.....	Wild flowers of the Chicago area....	Dr. H. S. Pepoon	50	6	285
VII.....	A field course for teachers.....	Dr. H. S. Pepoon	60	6	269
VIII.....	Physical geography	Miss Hardman	212	6	1040
IX.....	Natural history; collecting and mounting	Mr. Baker	16	7	63
IX, Waiting-list.....	Natural history; collecting and mounting	.....	28	..	....
X.....	Some common farm products	Miss Hardman	106	6	441
XI, Sec. I..	How to know the common minerals and rocks	Miss Hardman	22	6	129
XI, Sec. II..	How to know the common minerals and rocks	Miss Hardman	22	5	102
XI, Waiting-list.....	How to know the common minerals and rocks	.....	31	..	....
XII.....	Nature-study work for teachers.....	Dr. H. S. Pepoon	100	6	352
XIII.....	Bird-study for teachers.....	Mr. Woodruff	25	6	76
XIV.....	Leaves and small fruits	Dr. H. S. Pepoon	119	6	576
College credit....	Minerals and rocks	Dr.W.W.Atwood	32	12	384
College credit....	Political geography	Dr. W. S. Tower	20	12	240

Fifth: Public lectures and special meetings have been held at the Academy to the number of 27, with a total attendance of 3,326. The record of these meetings is as follows:

LECTURES AND MEETINGS AT THE ACADEMY

Date	Subject	Attendance	Lecturer
1911			
Jan. 10..	Annual meeting	16	.....
Feb. 3..	Social Hygiene	100	Dr. Morse
" 3..	23 Div. W. C.	4	Dr. Davis
" 10..	Social Hygiene	100	Dr. Hedger
" 17..	Social Hygiene	85	Dr. Young
" 24..	Social Hygiene	90	Dr. Young
" 28..	Annual meeting continued	16	.....
" 24..	Soirée	500	.....
Mar. 3..	California	175	Col. Holp
" 3..	Social Hygiene	75	Dr. R. V. Snow
" 10..	Social Hygiene	50	Dr. Hedger
" 15..	Committee	5	Dr. Pepoon
" 17..	Yellowstone Park	250	Mr. Truax
" 7..	Regular meeting	20	.....
Apr. 3..	Men's meeting	175	Called by Mr. Simmons
" 7..	Mountain Climbing in Colorado	180	Mr. Cooper
" 21..	Exhibit of Enlargements	100	Mr. Wells and Mr. Woodruff
" 18..	Our Friends of Feather and Song	50	Mr. Conrad
" 22..	Nature-Study Club	....	.....
" 28..	Mesa Verde	170	Dr. W. W. Atwood
" 29..	Audubon Society meeting, "Bird Notes"	180	Mr. Oldys
Oct. 11..	Motion-Picture Film of Zoo	180	Mr. DeVry
" 20..	The Underground Realm	175	Dr. Atwood
" 20..	Colorado Canyon	175	Dr. Atwood
" 27..	Modern Principles of Treating Diseases	175	Dr. J. Holinger
Nov. 10..	The Petroleum Industry in America	100	Dr. Tower
" 17..	Other Worlds than Ours	180	Dr. Moulton
		3,326	

THE ENTOMOLOGICAL SECTION

The Entomological section of the Academy has held ten meetings during the year. Eight of these meetings have been held at the John Crerar Library and two have been field trips.

Sixth: Twenty-five lectures or addresses have been given by members of the Academy staff to a total audience of 6,955. The accompanying table (page 225) contains a record of this work.

The total number of persons reached through the educational work during the year 1911 is estimated at 170,770. There is undoubtedly some duplication in this number, for many of the children are reached in several ways.

LECTURES OR ADDRESSES GIVEN BY MEMBERS OF THE ACADEMY STAFF

Date	By Whom Given	School	Grade	Attendance	Subject
Jan. 17	Mr. Baker.....	Franklin	7 and 8	400	Birds
" 31	Mr. Baker.....	Bismark	7 and 8	325	Birds
" 31	Dr. W. W. Atwood	Parents' Asso. of Highland Park	Adults	300	A Study of Home Geography
Feb. 9	Mr. Baker.....	Bismark	3 to 6	325	Birds
" 11	Mr. Baker.....	Nature-Study Club	Adults	75	Informal talk
" 15	Dr. W. W. Atwood	Park	Mixed	400	
" 17	Dr. W. W. Atwood	Teachers of Waukegan County at Lake Forest meeting	Adults	300	Geographic Study of North Shore
Mar. 5	Mr. F. C. Baker..	Church of Redeemer	Mixed	65	Birds
" 6	Dr. W. W. Atwood	Chicago Normal College	Adults	800	Exploration in Alaska
" 7	Mr. F. C. Baker..	Elm St. Gram. School	Mixed	300	
" 8	Miss Hardman...	Franklin	5 to 8	400	Weathering
" 10	Dr. W. W. Atwood	Chicago Geographic Society	Adults	500	The Mesa Verde National Park
" 30	Mr. F. C. Baker..	Lloyd	4 to 8	450	Birds
" 31	Mr. F. C. Baker..	Agassiz	Adults	50	Birds
Apr. 6	Mr. F. C. Baker..	Church	Adults	50	Birds
" 21	Miss M. A. Hardman.....	Lincoln School, Peoria	1 to 8	700	Birds
" 21	Miss M. A. Hardman.....	Lincoln School, Peoria	Mixed	100	Birds
" 27	Dr. W. W. Atwood	Francis W. Parker	Children	240	Cliff Dwellers
" 27	Mr. F. C. Baker..	West Park	Children	300	Birds
May 3	Dr. W. W. Atwood	Parents' Asso. of Lake Forest	Adults	250	The Yellowstone National Park
" 4	Mr. F. C. Baker..	Sheridan Park	Adults	100	Birds
" 16	Dr. W. W. Atwood	Child-Welfare Exhibit	Adults	250	Museum Extension Work
Oct. 11	Dr. H. S. Pepoon.	Henry Booth Settlement	Children	75	Flowers
" 25	Miss M. A. Hardman.....	Henry Booth Settlement	Children	100	Wheat Raising
Nov. 1	Mr. F. C. Baker..	Henry Booth Settlement	Children	100	Birds
Total.....25.....				6,955	

Seventh: The Constitution and By-Laws have been thoroughly revised and the new forms have been published and distributed to the

members. The Board of Trustees and the Executive Board have been reorganized in accordance with the revised constitution.

REORGANIZATION OF THE ACADEMY STAFF

To centralize the administrative duties and to render the services of the Museum staff more effective a reorganization of the Academy staff has been undertaken.

Miss Hardman has been appointed Instructor and Librarian; Mr. Woodruff has been promoted from the position of taxidermist to that of Assistant Curator in charge of ornithology; three Museum aids have been engaged, one to work under the immediate direction of Mr. Baker, another under Mr. Woodruff, and the third to attend to the printing and be generally useful about the Museum. Several persons have been tried at artificial foliage work, but the right one has not yet been found.

The Secretary has been appointed Acting Director.

THE CHILD-WELFARE EXHIBIT

One notable feature in the work of the past year has been the participation on the part of the Academy in the Child-Welfare Exhibit which was held in the city during the months of May and June. The Academy was duly represented on the Executive Board of the Child-Welfare Exhibit and the chairmanship of the Museum section was assigned to an officer of the Academy. Our participation in this movement in the city gave us at an appropriate time an opportunity to give general publicity to the educational work which we are doing, and, furthermore, an opportunity to study the effectiveness of our material on a large number of children and adults. The results of the exhibit, from our standpoint, have been exceedingly satisfactory. We were pleased that many public-spirited citizens of Chicago who had not known of our work visited the museum section and through their expressions of appreciation gave us not only encouragement but a confidence that the work which we were doing would soon command an adequate support from the community. There was nothing in our work which received any serious criticism, but expressions of regret were frequent that our work did not reach the more distant parts of the city. The exhibits were arranged to hold the attention of the children, and there was no question but that they were remarkably successful in that respect. It was an opportunity

to try out the idea of a children's natural-history museum, an idea which has been before the Society for some time, for the further development of this institution.

During the period of the exhibit a special conference was held on museum and library extension work of the city. Dr. Chamberlin, President of our Academy, was chairman of that meeting, and the Secretary was assigned a place on the program. The conception of a free museum dedicated to the children of the city and conducted for the general educational good of those who may visit the Museum and those whom it may reach through museum extension work was presented at that time.

NOTABLE GIFTS TO THE ACADEMY DURING 1911

The larger gifts to the Museum have been mentioned by the Curator, but there are several other donations worthy of special mention.

Mr. Charles Dickinson presented to the Academy two special editions of the revised constitution and by-laws of the Society.

The two hundred bird books distributed as special awards at the Child-Welfare Exhibit were given by Mr. La Verne W. Noyes.

A special subscription of $500 has been received from Mr. Louis E. Laflin for the promotion of the work of the Academy.

In connection with the preparation of our loan collections we have received valuable contributions of material from the

Corn Products Refining Company,

The Featherbone Company,

The Standard Oil Company,

The International Harvester Company.

The largest recent gift to the Academy has come from Miss Melissa Dickinson who so mentioned the Academy in her will that upon the maturity of the bequest the Academy will receive an amount approximately equal to its present endowment.

THE FUTURE

While the record of our last year's work is of interest and is suggestive and very encouraging, the outlook for the future is still more interesting and still more encouraging. We have felt since the reorganization of the different boards of the Academy, as authorized by the revised constitution and from remarks of individual members and friends of the Academy, a strong impetus to do greater things.

The Executive Board has approved a large and progressive policy for the development of the scientific and educational work of the institution. The Board of Trustees has approved expenditures for the promotion of the work called for by the recommendations of the Executive Board, but the program which the officers would like to carry out during the coming year is even more progressive than the present funds of the institution will permit. We would like to equip a small general science library and reading-room for children, as emphasized in the report of the Librarian. The funds necessary for establishing such a reading-room and maintaining it for the first year will amount to about two thousand dollars. After the first year there would be but a small cost for maintenance.

We should like to instal a special modern exhibit in the main corridor of the first floor of the Museum. The present central exhibit should be replaced by one which would immediately command attention and some enthusiasm for visiting the other portions of the Museum. It has been suggested that a modern panoramic exhibit of a group of the night herons might be installed at this place, with the case so arranged that one views, on entering the vestibule, a reproduction of the landscape to the southwest of Chicago where a colony of the night herons nest. The material for this exhibit is at hand. It is of unusual interest and of some scientific importance, for the night herons may soon become extinct in the Chicago region. They are known to nest now in but one place in the vicinity. This exhibit should be provided with a landscape painting carrying the foreground, which will be a reproduction of the field, far into the distance. Internal lighting should be provided, and the exhibit made in every way equal to the best and most modern efforts in museum work. This special exhibit is estimated with the case to require an appropriation of about $1,500.

We should like to instal on the rail of the balcony a line of cases and a display exhibit of the butterflies and insects which are at present stored away in various cases about the building. The cases now on exhibition here give an idea of the work which it is proposed to continue for the balcony rail. There will be a number of display cases as shown at the south end of the balcony, and at unit distances special cabinets in which ecological or landscape exhibits will be installed. These special cabinets at unit distances will break the monotony of the case line about the balcony and introduce the element into the insect collection which has been so effectively used in the bird exhibits.

The completion of this exhibit around the balcony will need, in addition to the funds already appropriated, about one thousand dollars. One such exhibit has been prepared by Mr. Baker. The landscape painting is the work of Mr. Tuttle, a member of the Academy.

We should like to rearrange the exhibit of the American deer, the large central piece on the main Museum floor. That case should be completely inclosed on three sides of the window or so-called "peak-hole" opening to be placed on the fourth side. A painted background should be provided and internal lighting installed. The exhibit now lacks effectiveness and artistic finish because the observer sees through the case and a mixed or heterogeneous picture is before him. The three walls of the case, when so inclosed, will become available for additional cases and the large plate-glass panels could be used in the making of these outer cases. The expense of reconstructing this case and making it a piece of most modern and effective museum work will require an appropriation, beyond the funds immediately available, of $1,600.

Plans have been made for the construction of a sidereal globe at the south end of the balcony. This globe is a special device which has recently been planned for exhibiting the stars as they appear at any time of the night on any evening of the year. The stars, when they appear in this sphere, will be so labeled that the student may become familiar with many of the larger stars and with the chief constellations of the heavens. The moon and the planets may also be presented in this device. The construction of the exhibit may, by means of an electrical equipment, provide special switches so that a particular star or constellation may be brought out by itself. If by means of this exhibit we arouse an interest in the science of astronomy the Academy will make a real contribution to the museums of the world. It is a pleasure to announce that the President of the Board of Trustees, Mr. La Verne W. Noyes, has undertaken to construct this exhibit for the Academy. The contribution associated with this work will probably be larger than that specified in any of the other needs of the Academy as just presented.

At the suggestion of Mr. Noyes, a series of special loan exhibits have been planned. These exhibits may be borrowed by social settlements, park houses, public or private schools and branch libraries, or by members of the Academy. They are to have a certain seasonal appropriateness and to add an element of artistic beauty to the educational and scientific features in the museum-extension work.

The first of these exhibits has been prepared by Mr. Woodruff

with the assistance of Mr. Tuttle. The subject is "The Birds Wintering in Chicago."

In closing this report I wish to quote from a recent paper entitled, "The Museum of the Future,"[1] by President Osborn of the American Museum of Natural History:

> Very few people, even among those who have the means to travel, really see Nature in the sense of understanding it, and to the millions within the cities Nature is practically unknown. So we are interpreters; we are trying to tell in a very simple way the laws which the greatest minds have wrestled with from the earliest times; and we are also trying to add to these laws, for it is part of the genius of the institution to create new knowledge as well as to spread it. This gradual elucidation of the deep and difficult is to my mind one of the most marvelous features in the growth of science. Some great law is first in the will of the Creator, then, like the light of a star so distant that it takes ages to reach the earth, it reaches the mind of some great naturalist, and finally it comes down, down, down to the vision of the very youngest. And the best way to learn one of these laws is to see it in operation; this is far better than to read about it, for what is seen becomes part of oneself.

From another paragraph in the same paper I quote:

> I believe strongly that the average child is a better nature observer than the average adult, and if you let children alone they will see a great deal.

And quoting from the same article:

> Nature-study in the school and in the open already has hosts of friends; it is no longer on trial, it is an established system. Nature-study in the museum is a newer part of the same educational movement. The great museum can, however, do what neither school, college, nor even the university can; it can bring a vision of the whole world of nature, a vision which cannot be given in books, in classrooms, or in laboratories. This is a branch of public education which is especially urgent in a great city, crowded with the works of man, and where except for the nightly vision of the heavens obscured by smoke and dust, and the altered wild life of our parks, the works of Nature are totally destroyed.

The Secretary will be pleased at any time to take up the work of the Academy in more detail, and to furnish estimates to anyone who would like to undertake the installation of the children's library or any of the special exhibits which have been approved by the Executive Board.

Respectfully submitted,

WALLACE W. ATWOOD
Secretary and Acting Director

[1] *American Museum Journal*, November, 1911, by Henry Fairfield Osborn.

BIRDS WINTERING IN CHICAGO

Special loan exhibit for use in the schools, park houses, social settlements, and other educational institutions.

Many are familiar with our methods of organizing classes and distributing museum material to the schools. There may be some, however, who learn for the first time of this work and who become acquainted with the customs which have grown up and associated with the co-operative work of the Academy with the public schools.

The educational courses which are open to delegates are planned to meet, as best we can, the demands from the teachers and children for assistance in connection with the nature-study course as adopted by the Board of Education. We realize that it would be impossible to admit all children who would attend these courses. One delegate may be sent from each grade to such courses as are planned for students of that grade. A delegate is expected to pay such careful attention, record notes when necessary, and be prepared to report to his or her class at a time to be allotted by the teacher of the room, the work of which he had the benefit at the Academy. This plan of "Little Reporter" has worked very well in the schools during the last three years. The freshness of the material which the child brings to his schoolmates has added much to the interest of their nature-study work, and those teachers who have not yet introduced these methods are cordially encouraged to try it. Much depends upon the selection of the delegate, and frequent changes may be made if it is thought desirable. All delegates who intend to take the work must be present promptly at the first meeting in order to secure a place on the permanent class roll.

Several tickets for delegates will be inclosed with this number of the *Bulletin* and others may be secured by application at the Academy office.

The instructional courses which are open to teachers are open to all who may apply until the class roll is complete. Registration may be made by mail, but all who intend to take the work must be present promptly at the first meeting in order to secure a place on the permanent class roll.

The announcement regarding the loan collections appears in this *Bulletin* immediately before the list of loan collections which are available.

COURSE IX. A Laboratory Course for Pupils of Eighth Grade. Limited strictly to 30. On the Selection, Preservation, and Proper Display of Nature-Study Materials. Based on school collections now on hand. By Dr. H. S. Pepoon.

Six lessons beginning February 7. Continuing each week.

COURSE XI. How to Know the Common Minerals and Rocks. Laboratory work. For delegates from the Sixth and Seventh Grades. Limited to 20. Saturdays at 10 A.M. By Miss Hardman.

February	17.	Lesson I.	Some Common Minerals.
February	24.	Lesson II.	Some Common Minerals.
March	2.	Lesson III.	The Sedimentary Rocks.
March	9.	Lesson IV.	The Igneous Rocks.
March	16.	Lesson V.	The Metamorphic Rocks.
March	23.	Lesson VI.	Laboratory Work.

COURSE VI. Physical Geography. For Delegates from the Fifth and Sixth Grades. Limited to 30. Tuesdays at 4 P.M. By Miss Hardman.

March	12.	Lesson I.	How the Soil Is Made.
March	19.	Lesson II.	Rivers and Their Work.
March	26.	Lesson III.	The Work of Water in the Ground.
April	2.	Lesson IV.	Mountains.
April	9.	Lesson V.	The Work of Snow and Ice.
April	16.	Lesson VI.	Physical Geography of Illinois.

COURSE X. A Study of Some Common Farm Products. For delegates from the Sixth and Seventh Grades. Saturdays at 10 A.M. By Miss Hardman.

March	30.	Lesson I.	Wheat Raising.
April	6.	Lesson II.	Corn Raising.
April	13.	Lesson III.	Cotton Growing.
April	20.	Lesson IV.	Hay Raising.
April	27.	Lesson V.	Rice Culture.
May	11.	Lesson VI.	Cattle Raising.

COURSE XV. A Laboratory Course for Delegates from the Eighth Grade. (Must be other pupils than in Course IX.) Limited to 30. Mondays at 4 P.M. By Dr. H. S. Pepoon. On the Plant Phenomena of Spring with Their Explanations.

April	1.	Lesson I.	Winter Leaf and Rosette.
April	8.	Lesson II.	Food Storage of Bulb, Tuber, and Fleshy Root.
April	15.	Lesson III.	The Swelling and Unfolding Buds.
April	22.	Lesson IV.	The First Shoots.
May	6.	Lesson V.	The Early Flowers.
May	13.	Lesson VI.	The Trees in Spring.

COURSE VII. A Field-Study Course for Teachers.

The great floral regions will be visited. The effect of topography upon plant distribution interpreted and the characteristic vegetation discovered and discussed. Saturdays from 9 A.M. to 3 P.M. By Dr. H. S. Pepoon.

April	27.	Trip I.	The North Shore and Ravine Flora.
May	11.	Trip II.	A Trip to the Des Plaines Valley.
May	25.	Trip III.	A Trip to the Dunes, Dune Park.
June	1.	Trip IV.	A Trip to the Original Prairies.

COURSE XIV. A Laboratory Course for Teachers.

For the determination of flowers by analytical keys. To gain acquaintance with the myriad forms of the Chicago Flora. To acquire a knowledge of the great plant families. By Dr. H. S. Pepoon.

April	17.	Lesson I.	Willows, Caltha, etc.
April	24.	Lesson II.	Violets, Anemones, Crowfoot.
May	8.	Lesson III.	Trilliums, Bluebells, etc.
May	15.	Lesson IV.	Geraneums, Phlox, Bluebells.
May	22.	Lesson V.	Rose, Orchids, etc.
May	29.	Lesson VI.	Later Flowers.

TEACHERS COLLEGE CREDIT COURSE. The Identification of Common Minerals and Rocks. By Wallace W. Atwood.

Tuition, $7.00. 12 lessons. Credit of one minor at the University of Chicago. Thursdays at 4 P.M. Beginning April 6. No prerequisites required.

CLASS WORK AT THE ACADEMY

The Academy cordially invites teachers to bring their classes to the Academy and offers to provide, whenever possible, and when it is desired by the teacher, someone to assist in conducting the lesson at the Museum.

We trust that all classes visiting the Museum will register at the office. Arrangements for special class meetings or for the use of the lecture-room or laboratory at the Museum should always be made by appointment. This may often be done conveniently by telephone, calling Lincoln 2410 and asking for the Academy office.

ILLUSTRATED LECTURES AT THE SCHOOLS

The Academy will continue to offer a limited number of illustrated lectures on scientific topics, free of charge, in the public schools. These lectures must be arranged for by special appointment.

MUSEUM LOAN COLLECTIONS

It is the policy of the Academy to promote in all ways possible the use of the Museum collections in the public schools. The officers

of the Academy are desirous of improving these collections in every way possible, and of adding such new collections as will be used. We hope to prepare additional reading-matter to accompany the collections and, if possible, to add photographic illustration to each collection.

Collections may be retained for one week from date of issue. Birds and other specimens of a fragile or delicate nature must not be handled by the pupils. Only one collection will be issued at one time, but this may be exchanged for another at the expiration of the allotted time. It is expected that the collections will be returned to the Academy in good condition. The following collections are now ready for use:

BIRD SERIES

		No. of Specimens
No. B 1.	Winter Residents	6
No. B 2.	Residents	6
No. B 3.	Early Spring Arrivals	6
No. B 4.	Birds of the Great Lakes	3
No. B 5.	Birds of the Air	6
No. B 6.	Summer Residents	6
No. B 7.	Birds of Swamps	6
No. B 8.	Birds of Shores of Lakes	5
No. B 9.	Birds of Prey	4
No. B10.	Seed-eating Birds	5
No. B11.	Swimming Birds	4
No. B12.	Wading Birds	4
No. B13.	Six Common Birds	6
No. B14.	Grouse and Pigeon	3
No. B15.	Six Migrant Warblers	6
No. B16.	Six Common Woodpeckers	6
No. B17.	Six Common Warblers	6
No. B18.	Six Familiar Birds	6

ZOÖLOGICAL SERIES

No. Z19.	Three Common Fishes	3
No. Z20.	Six Common Mammals	6
No. Z21.	Life-History of a Butterfly	7
No. Z22.	How Insects Hide	7
No. Z23.	Grasshoppers and Dragon-Flies	11
No. Z24.	Ants, Bees, and Wasps	9
No. Z25.	Flies	9
No. Z26.	Bugs	9
No. Z27.	Beetles	12
No. Z28.	Lace-winged Insects	4
No. Z29.	Some Common Butterflies	8

		No. of Specimens
No. Z30.	Some Common Moths	5
No. Z31.	Life-History of a Beetle	10
No. Z32.	The Chambered Nautilus	1
No. Z33.	Snails of Field and Forest	10
No. Z34.	The Oyster and Its Relatives	10
No. Z35.	Beautiful Shells of the Tropics	7
No. Z36.	A Day with the Pond Snails	10
No. Z37.	Odd and Interesting Sea Snails	8
No. Z38.	Star-Fishes and Sea-Urchins	7
No. Z39.	Corals	7
No. Z40.	Sea Fans and Sea Plumes	3

ECONOMIC SERIES

No. E32.	Petroleum Products	19
No. E33.	Corn Products	18
No. E34.	The Hemp Industry	62
No. E35.	The Wheat Industry	24
No. E36.	The Wheat Industry	24
No. E37.	The Wheat Industry (Charts)	2
No. E38.	The Wheat Industry (Charts)	2
No. E39.	The Featherbone Industry	14
No. E40.	The Featherbone Industry	14
No. E41.	The Pearl-Button Industry	7
No. E42.	The Ivory-Button Industry	5
No. E43.	Some Common Ores	11
No. E44.	Artificial Abrasives	11
No. E45.	The Iron and Steel Industry	11
No. E46.	Aluminum Ores and Products	7
No. E47.	Coal	5
No. E48.	The Silk Industry	14
No. E49.	The Cotton Industry	11
No. E50.	The Wheat Industry	24
No. E51.	The Wheat Industry (Charts)	2
No. E52.	Some Familiar Commercial Woods	18

GEOLOGICAL SERIES

No. G53.	Eight Common Rocks	8
No. G54.	Some Common Sedimentary Rocks	6
No. G55.	Some Common Igneous Rocks	6
No. G56.	Some Common Metamorphic Rocks	7
No. G57.	Fossils of Rock of Chicago Area	8
No. G58.	Examples of Weathering	8
No. G59.	Crystals of Common Minerals	16
No. G60.	The Mantle Rocks	6

LANTERN SLIDES

At the urgent request of many, the Academy has undertaken to prepare several sets of lantern slides illustrating natural history and other scientific work conducted in the schools. These sets may be borrowed by a teacher or a principal upon written application. A set of lantern slides may be retained for one week. It is expected that special care will be taken of this material and that it will be returned to the Academy in good condition. The following sets are now ready:

NATURE-STUDY

		No. of Slides
No. L 1.	Resident Birds	13
No. L 2.	Winter Birds	12
No. L 3.	Migrant Birds	14
No. L 4.	Summer Birds	36
No. L 5.	Foreign Mammals	19
No. L 6.	American Mammals	23
No. L 7.	Fresh-Water Pearl-Button Industry	25
No. L 8.	Pearls and Mother-of-Pearl	21
No. L 9.	Sponges	21
No. L10.	Conservation of Forests	12
No. L11.	Lower Animals	26
No. L12.	Fishes and Reptiles	15
No. L13.	Wave Work	14
No. L14.	River Work	22
No. L15.	Alaska	35
No. L16.	Yellowstone Park	36
No. L17.	The Coffee Industry	31
No. L18.	Rubber and Sisal Hemp	25
No. L19.	Some Common Trees	29
No. L20.	Mountains	45
No. L21.	Glaciers	20
No. L22.	Weathering and Wind Work	19
No. L23.	The Silk Industry	19
No. L24.	The Cotton Industry	29
No. L25.	The Rice Industry	22
No. L26.	The Wheat Industry	54
No. L27.	Truck Farming	18
No. L28.	Dairying	36
No. L29.	Corn Raising	10
No. L30.	Hay Making	7
No. L31.	Starved Rock	25

PICTURE COLLECTIONS

Many teachers have found pictures, especially stereoscopic views, of special value to them in their work, and in response to many suggestions and requests the Academy has purchased a number of sets of stereoscopic views which illustrate topics in nature-study and physiography work. A set of views may be borrowed by a teacher, or principal upon written application and retained for one week. The following sets of views are now ready for distribution:

PHYSIOGRAPHY

		No. of Views
No. P 1.	Weathering and Stream Erosion	25
No. P 2.	Glaciers	25
No. P 3.	Shore Lines and Harbors	25
No. P 4.	Mountains	25

NATURE-STUDY

No. P 5.	American and Foreign Mammals	30
No. P 6.	American and Foreign Birds	25
No. P 7.	Fruits of Tropical and Temperate Climes	30
No. P 8.	Domestic Animals	15

ECONOMIC SUBJECTS

No. P 9.	The Cotton Industry	25
No. P10.	The Iron and Steel Industry	35
No. P11.	Wheat, Corn, and Oats	25
No. P12.	Lumbering	25
No. P13.	The Silk Industry	19
No. P14.	Copper Mining	13

THE MEMBERSHIP ROLL

During the fall a number of prominent citizens, especially of the north side of the city, were nominated for membership in the Academy by members of the Board of Trustees and of the Executive Board. From this movement for increasing the membership in the society, we have received into membership: 1 Life Member, 16 Associate Members, 42 Active Members, making a total of 59 new members from this campaign. During the year the increase in membership in all ways has amounted to 80.

The present membership roll is as follows:

Fellows	20
Life Members	26
Active Members	135
Associate Members	36
Corresponding Members	6
Total	223

Following is a list of new members added to the Academy during the year 1911:

LIFE MEMBERS

Garnett, Eugene H.	409 Greenwood Boulevard, Evanston, Ill.
Hayden, Charles E.	3319 Michigan Avenue.
Lichtenberger, Charles	1316 Dearborn Avenue.
Rea, Mrs. Robert Laughlin	17 West Huron Street.
Rumsey, Henry A.	Lake Forest, Ill.

ACTIVE MEMBERS

Bartlett, A. C.	State Street Bridge, Chicago.
Bates, Onward	832 Belden Avenue.
Brennan, George A.	24 West 110th Place.
Buck, Benj. F.	Principal, Lake View High School.
Buford, Dr. Coleman G.	240 East Huron Street.
Buzzell, Delos	3930 Lowell Avenue.
Conover, Charles Hopkins	1522 North State Street.
Cooke, Miss Flora J.	Principal, Francis W. Parker School.
Curtiss, Charles C.	1404 Astor Street.
Fiske, Dr. George F.	Lake Forest, Ill.
Fuller, Henry Frederick	6023 Winthrop Avenue, Edgewater, Ill.
Graue, John G.	1254 North State Street.
Grosvenor, Dr. Wallace F.	4829 Kenmore Avenue.
Hately, John C.	70–71 Board of Trade.
Haupt, Arthur W.	1321 Norwood Street.
Henschen, Henry S.	242 Washington Street.
Herzberg, Walter F.	160 East Ontario Street.
Heuermann, Minnie S.	Principal, Schley School.
Isham, Dr. George S.	1342 North State Street.
Kjellberg, Mrs. Thekla S.	10 East Huron Street.
Leicht, Edward A.	940 West Chicago Avenue.

McClurg, Ogden T.	1444 Lake Shore Drive.
McCormick, Harold F.	Stock Exchange Building.
Manierre, George	100 Bellevue Place.
Maynard, Helen	Glen View, Ill.
Morrill, Donald L.	4254 Hazel Avenue.
Morrison, James W.	719 Rush Street.
Palmer, Jr., Potter	843 Lincoln Park Boulevard.
Patten, Henry	1028 Greenwood Boulevard, Evanston, Ill.
Perkins, H. F.	6106 Kenmore Avenue.
Port, F. E.	3445 Prairie Avenue.
Rice, Daniel F.	1336 La Salle Avenue.
Roehrig, Dr. G. Edward	5011 Grand Boulevard.
Schlick, E. R.	1156 North Clark Street.
Schupmann, Dr. Martin A.	1765 Sheffield Avenue.
Scudder, Miss Mary	63 Bellevue Place.
Sexton, Mrs. James A.	1439 La Salle Avenue.
Shumway, N. C.	4416 North Robey Street.
Slocum, L. T. M.	5047 Kenmore Avenue.
Smith, Dr. Donald G.	Chicago Teachers College.
Smith, Judge Frederick A.	609 Rush Street.
Smith, Orson	50 Bellevue Place.
Smith, Wilbur M.	5636 Kenmore Avenue.
Sudler, Carroll H.	1305 Ritchie Place.
Thomas, Morris St. Palais	745 Lincoln Parkway.
Trostler, Dr. I. S.	615 Garfield Avenue.
Truax, Charles	4555 North Paulina Street.
Tuttle, Charles M.	225 Wisconsin Street.
Vickery, Miss Mabel S.	23 East Division Street.
Wacker, Charles H.	1341 North State Street.
West, Frederick T.	68 East Division Street.
Wilk, Frederick L.	415 Surf Street.
Wood, Dr. Casey A.	Chicago Savings Bank Building.
Wrigley, Jr., William	2466 Lake View Avenue.

ASSOCIATE MEMBERS

Baggett, J. E.	Supt. of Schools, Lake Forest, Ill.
Bagley, Frank R.	439 North Grove Avenue, Oak Park, Ill.
Bunnell, Mellie G.	540 Garfield Avenue.
Coddington, Archibald O.	Principal, Stewart School.
Cunningham, Clara A.	South Bend, Ind.

Donnelley, Thomas E.	731 Plymouth Place.
Evans, Lynden	1240 Astor Street.
Foltz, Fritz L.	37 East Division Street.
Hamill, Dr. Ralph C.	Virginia Hotel.
Hardman, Mary A.	South Bend, Ind.
Harrison, Dr. W. K.	1244 North State Street.
Herrick, John J.	45 East Schiller Street.
Horr, Mrs. J. L.	4601 Beacon Street.
Lindblom, Miss Lenor	1656 La Salle Avenue.
Lipman, Mayer	1609 W. 63d Street.
McCrea, Wiley S.	People's Gas Light and Coke Co., 128 South Michigan Boulevard.
McGillen, Elizabeth A.	Principal, Coonley School.
Motschman, Emma	843 George Street.
O'Keefe, Isabelle C.	4912 Michigan Avenue.
Walker, Amos W.	4656 Kenmore Avenue.
Waller, Mrs. Robert	4210 Sheridan Road.

Vol. III No. 9

BULLETIN

OF THE

Chicago Academy of Sciences

FALL ANNOUNCEMENTS 1912

This number of the Bulletin contained pages 241-248 inclusive. The announcements were of educational courses offered at the Academy, but the call for these announcements from the Public Schools was so great that the edition was exhausted.

We regret that we can not furnish you this number.

Wallace W. Atwood, Secretary.

CHICAGO
Published by the Academy
September, 1912

No. I. The Flora of Cook County, Illinois, and a Part of Lake County, Indiana. By William K. Higley and Charles S. Raddin. Out of print.

No. II. Preliminary Outline of a New Classification of the Family Muricidæ. By Frank Collins Baker, Curator. Price, 25 cents.

No. III. The Gross Anatomy of Lymnæa Emarginata Say, Var. Stagnalis, Binney. By Frank Collins Baker, Curator. Price, 50 cents.

No. IV. (1) The Distances of the Mantle in Physa. (2) Description of a New Species of Limnæa. By Frank Collins Baker, Curator. Price, 25 cents.

Bulletin, Volume III.

No. I. Annual Report, 1908. Price, 25 cents.

No. II. Report on Proposed Educational Work of the Chicago Academy of Sciences. Price, 25 cents.

Special publications:

No. I. Historical Sketch of The Chicago Academy of Sciences (1856–1903). By William Kerr Higley, Secretary of the Academy. Limited distribution.

No. II. The Chicago Academy of Sciences: Its Past History and Present Collections. Price, 10 cents.

Annual Reports:

Only four have been printed.

1878. Annual Address, by E. W. Blatchford, A.M.

1895. Thirty-Eighth Annual Report.

1896. Thirty-Ninth Annual Report.

1897. Fortieth Annual Report.

No. III. The Lymnæidæ of North and Middle America. By Frank Collins Baker. Price, $5.00.

II. By the Natural History Survey:

Bulletin No. I. The Lichen-Flora of Chicago and Vicinity. By William Wire Calkins. Price, 25 cents.

Bulletin No. II. The Pleistocene Features and Deposits of the Chicago Area. By Frank Leverett, U.S. Geol. Survey. Price, 50 cents.

Bulletin No. III. The Molluscs of the Chicago Area. Part I, The Pelecypoda. Part II, The Gastropoda. By Frank Collins Baker, Curator of The Chicago Academy of Sciences. Price, Part I, $1.00; Part II, $1.00.

Bulletin No. IV. The Paleontology of the Niagara Limestone in the Chicago Area. Part I, The Crinoidea. Part II, Trilobita. By Stuart Weller, of the University of Chicago. Price, 75 cents each.

Bulletin No. V. The Mineralogy of the Chicago Area. By Alja Robinson Crook, of the Northwestern University. Price, 50 cents.

Bulletin No. VI. The Birds of the Chicago Area. By Frank Morley Woodruff. Price, $1.00.

Bulletin No. VII. The Higher Fungi of the Chicago Region. Part I, The Hymenomycetes. By Dr. Will Sayer Moffatt. Price, $1.00.

In Preparation:

a. Boring Records of Chicago and Vicinity. By Dr. Wallace W. Atwood.

b. Paleontology. (Subsequent parts.) By Professor Stuart Weller.

c. Lepidoptera. By William L. Tower.

d. Reptilia and Batrachia. By Dr. Seth E. Meek.

e. Algæ. By Professor C. E. Atwell.

f. Pteridophyta and Bryophyta. By Professor E. J. Hill.

g. Flora of Cook County and Vicinity. (Phænogamia.) By Dr. B. S. Pepoon.

h. Ethnology and Archæology. By Dr. William A. Phillips.

i. Fishes. By Dr. Seth E. Meek.

j. Noxious Insects.

k. Composition of the Waters of the Deep Wells of the Chicago Area. By Dr. John H. Long.

l. The Niagara Formation. In charge of Dr. Thomas C. Chamberlin, Member.